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ORIGINAL ARTICLE

CYTOMORPHOLOGICAL STUDY OF SPECTRUM OF BREAST LESIONS AND DETERMINATION OF EFFICACY OF FNAC IN THE DIAGNOSIS OF VARIOUS BREAST LESIONS

Manas Madan[1], Manisha Sharma[2], Rahul Mannan[3], Mridu Manjari[4], Jasmeet Kaur[5], Saumil Garg[6]

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ABSTRACT: AIM: The present study was undertaken to study the Cytomorphological spectrum of breast lesions and to determine the efficacy of FNAC in the diagnosis of various breast lesions. **MATERIALS AND METHODS:** A total of 512 cases were included in the study. The period of study was from January 2014 to December 2014. **RESULTS:** The patient's age group ranged from 16 to 87 years with a mean age of 34.54 years. There were 6 male patients and 506 female patients. Among the category of lesions, the highest incidence recorded was of fibroadenoma (184=35.9%) that was followed by carcinoma (90=17.5%) and then by benign breast disease and fibrocystic disease with 79 and 48 cases respectively. Among carcinoma cases, 88 were classified as ductal carcinomas and 02 as mucinous carcinomas. Inflammatory lesions accounted for 65 cases (12.7%), which included 40 cases of abscess, 20 cases of granulomatous mastitis and 05 cases of chronic mastitis. 04 cases were categorized into Atypical Ductal Hyperplasia (ADH)/Ductal Carcinoma in Situ (DCIS) and 05 cases were classified as suspicious of malignancy. 38 of 90 cases classified as malignant showed enlarged and palpable axillary lymph nodes. 09 (10%) of these cases showed metastatic deposits. **CONCLUSION:** FNAC is a relatively simple procedure with good patient acceptance and low morbidity. It is an accurate, safe and repeatable procedure in the diagnosis of various breast lesions – both malignant and non-malignant.

KEYWORDS: FNAC, Carcinoma, Fibroadenoma, Metastatic.

INTRODUCTION: Breast cancer is the leading cause of cancer related deaths in women. These patients present with palpable breast lumps. The incidence of breast carcinoma however has started to fall in certain countries (North America, Western Europe and Australia) because of early diagnosis and improved therapy. The worldwide-accepted protocol for diagnosis of breast lumps is the "Triple Assessment" which includes clinical examination, mammography and pathological diagnosis. Fine needle aspiration cytology (FNAC) has become a diagnostic tool to assess the nature of palpable breast lesions.[1,2] It forms an important part of the pathological assessment since it is easy, relatively painless, quick and a cost effective technique. It also helps in planning of treatment of breast lump.[3] Moreover FNAC has a good sensitivity, specificity and accuracy in the diagnosis of both malignant and non-malignant breast lumps. Accuracy can be improved by multiple sampling from different angles and by using ultrasound guidance in very small lumps.[1,2,3] The present study was undertaken to study the Cytomorphological spectrum of breast lesions and to determine the accuracy & efficacy of FNAC in the diagnosis of various breast lesions.

MATERIALS AND METHODS: Aim of the study was to study the cytomorphological spectrum of breast lesions on Fine needle aspiration cytology (FNAC).

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A total of 512 cases were included in the study. The period of study was from January 2014 to December 2014.

Inclusion Criteria: All patients presenting with palpable breast lump of variable duration.

Exclusion Criteria:

1. Patients not willing (No informed consent).
2. Patients undergoing chemotherapy.

PROCEDURE: A written consent was taken from the patient along with detailed history. The breast was examined and palpated. The suspicious area was cleaned with antiseptic solution and spirit. The skin over the lump was stretched and multiple passes at different angles were taken with a 10 or 20 cc syringe fitted with a 22 G needle. The aspirated material was smeared on the glass slides. Few of them were air dried and stained by May Grunwald Giemsa (MGG) stain and the rest were stained with Hematoxylin & Eosin (H&E) stain.

RESULTS: The patient's age group ranged from 16 to 87 years with a mean age of 34.54 years. The commonest age group was 21-30 years comprising 197 cases (38.47%) with 31-40 years age group following it in the second position with 131 cases (25.6%).

There were 6 male patients and 506 female patients. Of the 6 male patients, 4 were diagnosed with gynaecomastia and 2 with carcinoma.

Among the category of lesions, the highest incidence recorded was of fibroadenoma (Fig. 1) (184=35.9%) that was followed by carcinoma (90=17.5%) and then by benign breast disease and fibrocystic disease with 79 and 48 cases respectively. Among carcinoma cases, 88 were classified as ductal carcinomas (Fig. 2, 3) and 02 as mucinous carcinomas (Fig. 4). Inflammatory lesions accounted for 65 cases (12.7%), which included 40 cases of abscess (Fig. 5), 20 cases of granulomatous mastitis and 05 cases of chronic mastitis. All 20 cases of granulomatous mastitis were non-caseating. (Table 1) 04 cases were categorized into Atypical Ductal Hyperplasia (ADH)/Ductal Carcinoma in Situ (DCIS) and 05 cases were classified as suspicious of malignancy. (Table 1)

Maximum incidence of fibroadenoma was found in age group of 21-30 years (87 cases) and the maximum incidence of carcinoma was found in 31-50 years (59 cases).

10 cases (1.95%) designated as others included duct ectasia, gynaecomastia and fatty aspirates. (Table 1)

The mean age for malignant cases was 43.24+- 14.45 years.

38 of 90 cases classified as malignant showed enlarged and palpable axillary lymph nodes. 09 (10%) of these cases showed metastatic deposits whereas 29 (32.2%) showed reactive changes. (Table 2).

DISCUSSION: FNAC is a sensitive, rapid, cost effective and a safe method in the evaluation of palpable breast lumps. It is less traumatic and provides immediate report to the patient and therefore is a widely accepted method of analyzing various breast lesions.[2,4,5,6,7,8,9] Proof of malignancy is the usual aim of such a procedure although it can be used for diagnosis of benign lesions as well as some inflammatory conditions.[5,7,8]

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The present study comprised of 529 aspirations performed on 512 patients. In 17 cases (3.2%), a second pass was needed, as the material was inadequate in the first instance. The aspiration was repeated in these cases as there was a strong suspicion of malignancy on clinical and radiological examination.13% of repeat aspirations have been cited in different studies because of an inconclusive first aspiration. It is also stated that an unsatisfactory aspiration must be repeated, particularly when there is strong suspicion of possible malignancy. [10] In 4 cases (0.8%), the material was inadequate for interpretation and aspiration yielded only fatty material in spite of the repeat aspiration.

In this study, the population ranged from 16 to 87 years with a mean age of 34.54 years. The commonest age group was 21-30 years comprising 197 cases (38.47%) with 31-40 years age group following it in the second position with 131 cases (25.6%). Similar results have been seen in other studies too. The mean age for malignant cases was 43.24±14.45 years.[1,2,3,4,5,8,9,11,12,13]

In the present study, 90 cases were positive for malignancy (17.5%). 04 cases (0.78%) were categorized into Atypical Ductal Hyperplasia (ADH)/Ductal Carcinoma in Situ (DCIS) and 05 cases were classified as suspicious of malignancy (0.97%). All of these 05 cases were later confirmed as malignant on histopathology. These were classified as suspicious as on FNAC, all the cytological features of malignancy were not present. Maximum incidence of carcinoma was found in 31-50 years (59 cases). Similar results regarding the percentage of cases positive for malignancy have been reported in various other studies.[1,2,4,5,9,11,12,13,14]

38 of 90 cases classified as malignant showed enlarged and palpable axillary lymph nodes. 09 (10%) of these cases showed metastatic deposits whereas 29 (32.2%) showed reactive changes. This correlates well with study performed by Rehman MZ and Islam S in which 10.32 % of malignant cases showed metastatic lymph nodes on FNAC.[1] However, certain other studies have showed higher percentage of metastatic lymph nodes in malignant cases.[15,16] This might be due to the limited sample size in our study.

Among the benign conditions, Fibroadenoma and benign breast disease were the commonest diagnosis accounting for 184(35.9%) and 79(15.4%) respectively. Maximum incidence of fibroadenoma was found in age group of 21-30 years (87 cases).

Fibrocystic disease accounted for 48 cases (9.2%). Other benign and cystic lesions encountered were simple benign cysts (18=3.5%), galactocele (1.34%) and benign phyllodes (2=0.4%). In simple cysts, the cyst disappeared on aspiration and a reaspiration was then performed to look for any residual component. Galactocele showed milky fluid and presence of histiocytes. These findings are in accordance with other studies, which showed similar results.[1,2,4,5,9,11,12,13,14]

Inflammatory lesions accounted for 65 cases (12.7%), which included 40 cases of abscess, 20 cases of granulomatous mastitis and 05 cases of chronic mastitis. All 20 cases of granulomatous mastitis were non-caseating and ZN stain for acid-fast bacilli (AFB) was negative. This could be due to the fact that tuberculosis of breast is a relatively rare lesion and not very commonly encountered.

Other cases (10=1.95%) included those of duct ectasia, gynaecomastia and cases in which repeated aspirates yielded only fatty tissue and hence no opinion was possible.

CONCLUSION: FNAC is a relatively simple procedure with good patient acceptance and low morbidity. It is an accurate, safe and repeatable procedure in the diagnosis of various breast lesions – both malignant and non-malignant. Repeated passes should be made for a greater yield of cytological material. FNAC should be used earlier and more frequently to shorten the diagnostic interval and allow more prompt therapy for malignant breast lesions.

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Lesion	Diagnosis		Total
Inflammatory	Abscess	40	65
	Chronic mastitis	05	
	Granulomatous mastitis	20	
Cystic	Benign simple cysts	18	73
	Fibrocystic	48	
	Galactocele	07	
Benign	Fibroadenoma	184	265
	Benign phyllodes	02	
	Benign breast disease	79	
Atypical	ADH/DCIS	04	09
	Suspicious of malignancy	05	
Malignancy	IDC	88	90
	Mucinous	02	
Others	Duct ectasia, Gynaecomastia, Fatty aspirates	10	10
Total			**512**

Table 1: Cytological Typing all breast lesions.

Lymph node	No.of cases	%
Metastatic	09	10.00
Reactive	29	32.22
Not palpable	52	57.78
TOTAL	**90**	**100.00**

Table 2: Axillary lymph node status in malignant cases

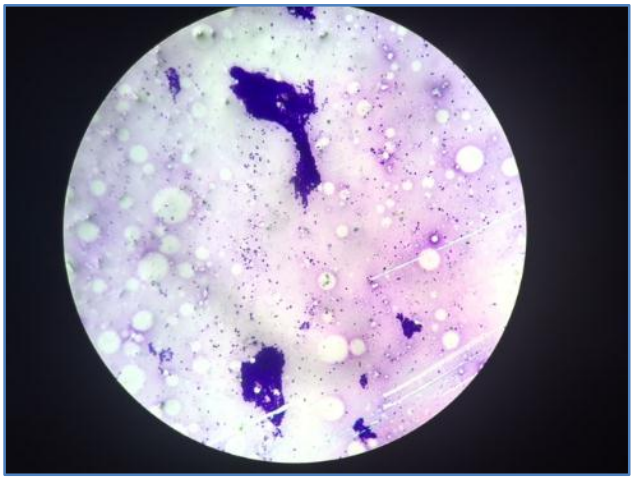

Fig. 1: Low power view showing tightly cohesive clusters of ductal epithelial cells with bare nuclei in background. (Giemsa stain 100X)

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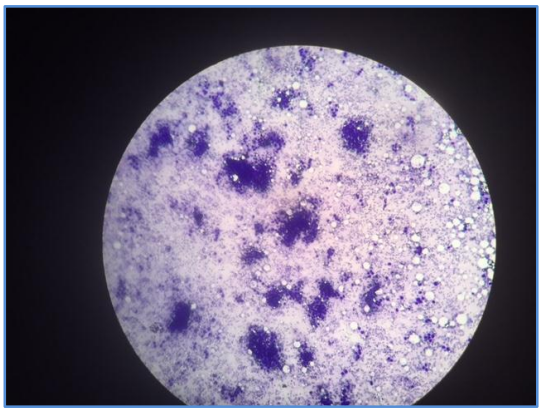

Fig. 2: Low power view with ductal epithelial cells in loosely cohesive clusters. (Giemsa stain 100X)

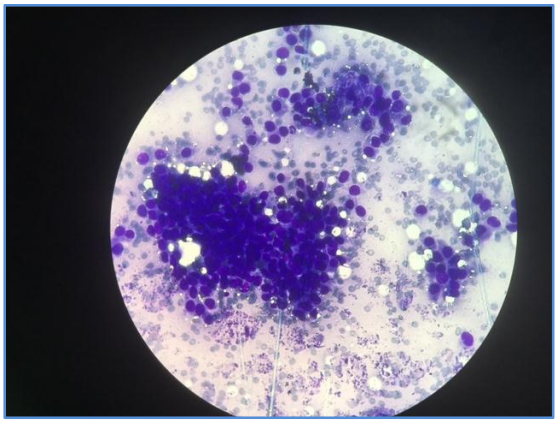

Fig. 3: High power view of the above slide showing nuclear and cellular pleomorphism along with overlapping. (Giemsa stain 400X)

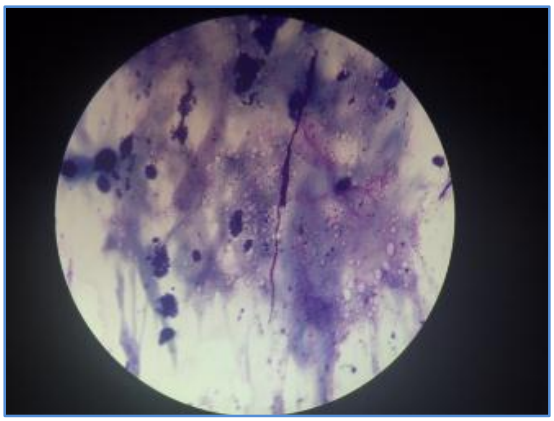

Fig. 4: Low power view revealing abundant mucinous background with few clusters of malignant ductal epithelial cells. (Giemsa stain 100X)

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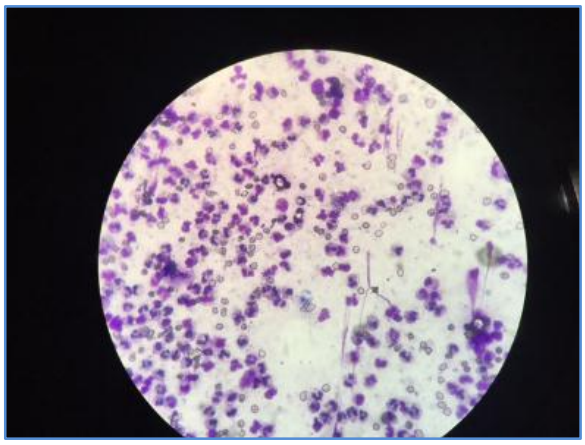

Fig. 5: High power view showing sheets of neutrophils. (Giemsa stain 400X)

AUTHORS:

1. Manas Madan
2. Manisha Sharma
3. Rahul Mannan
4. Mridu Manjari
5. Jasmeet Kaur
6. Saumil Garg

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Pathology, SGRDIMSAR, Amritsar, India.
2. Associate Professor, Department of Pathology, SGRDIMSAR, Amritsar, India.
3. Associate Professor, Department of Pathology, SGRDIMSAR, Amritsar, India.
4. Professor & HOD, Department of Pathology, SGRDIMSAR, Amritsar, India.
5. Junior Resident, Department of Pathology, SGRDIMSAR, Amritsar, India.
6. Junior Resident, Department of Pathology, SGRDIMSAR, Amritsar, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Manas Madan,
21-A, Sandhya Enclave,
Majitha Road,
Amritsar.
E-mail:manasmadaan@gmail.com

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